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SONY CDU701 USER MANUAL

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3-864-284-**62**(1)

CDU701

CD-ROM Drive Unit

User's Guide

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CDU701

CD-ROM Drive Unit

User's Guide

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Owner's Record

The model and serial numbers are located on the top side of the drive. Record these numbers in the spaces provided below. Refer to them whenever you call upon your sales representative regarding this product.

Model No. _____ Serial No. _____

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

CAUTION

The use of optical instruments with this product will increase eye hazard.
The use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

This unit uses CD-ROM discs with the following mark.

COMPACT disc

When you use this unit as an audio CD player, use compact discs with the following mark.

COMPACT disc DIGITAL AUDIO

CAUTION	INVISIBLE LASER RADIATION WHEN OPEN. DO NOT STARE INTO BEAM OR VIEW DIRECTLY WITH OPTICAL INSTRUMENTS.
VORSICHT	UNSICHTBARE LASERSTRAHLUNG, WENN ABDECKUNG GEÖFFNET. NICHT IN DEN STRAHL BLICKEN, AUCH NICHT MIT OPTISCHEN INSTRUMENTEN.
ADVARSEL	USYNLIG LASERSTRÅLING VED ÅBNING SE IKKE IND I STRÅLEN-HELLER IKKE MED OPTISKE INSTRUMENTER.
ADVARSEL	USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES. STIRR IKKE INN I STRÅLEN ELLER SE DIREKTE MED OPTISKE INSTRUMENTER.
VARNING	OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD. STIRRA EJ IN I STRÅLEN OCH BETRAKTA EJ STRALEN MED OPTISKA INSTRUMENT.
VARO!	AVATTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE. ÄLÄ TUIJOTA SÄTEESEEN ÄLÄKÄ KATSO SITÄ OPTISEN LAITTEEN LÄPI.

This label is located on the top of the drive.

Dieser Aufkleber befindet sich an der Oberseite des Gehäuses.

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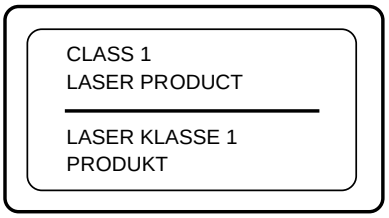
INFORMATION

You are cautioned that any changes or modifications not expressly approved in this manual could void your warranty covering this equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

– Reorient or relocate the receiving antenna.
– Increase the separation between the equipment and receiver.
– Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
– Consult the dealer or an experienced radio/TV technician for help.



LUOKAN 1 LASERLAITE
KLASS 1 LASER APPARAT

This CD-ROM Drive Unit is classified as a CLASS 1 LASER PRODUCT.
The CLASS 1 LASER PRODUCT label is located on the top of the drive.

Bei diesem CD-ROM-Laufwerk CDU701 handelt es sich um ein Laser-Produkt der Klasse 1.
Ein entsprechender Aufkleber mit der Beschriftung LASER KLASSE 1 PRODUKT befindet sich auf der Oberseite des Geräts.

Diese Ausrüstung erfüllt die Europäischen EMC-Bestimmungen für die Verwendung in folgender/folgenden Umgebung(en):

• Wohngegenden
• Gewerbegebiete
• Leichtindustriegebiete

(Diese Ausrüstung erfüllt die Bestimmungen der Norm EN55022, Klasse B.)

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Declaration of Conformity

Trade Name:	SONY
Model No.:	CDU701
Responsible Party:	Sony Electronics Inc.
Address:	1 Sony Drive, Park Ridge, NJ. 07656 USA
Telephone No.:	201-930-6970

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and

(2) This device must accept any interference received, including interference that may cause undesired operation.

Trademarks

- MS-DOS is a registered trademark of Microsoft Corporation.
- IBM PC, PC/XT, and PC/AT are registered trademarks of International Business Machines Corporation.
- HP Vectra is a registered trademark of the Hewlett-Packard Company.
- Molex is a registered trademark of Molex, Inc.
- AMP is a registered trademark of AMP, Inc.

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Introduction

Features

The CDU701 is an internal CD-ROM (Compact Disc Read-Only Memory) drive unit designed for use with an IBM PC, HP Vectra, or compatible computer. It can read as much as 540 Mbytes of digital data stored in a single CD-ROM disc.
The CDU701 has the following features:

General

- 5 1/4 inch half-height drive form factor.
- 128-kbyte buffer memory ATA-PI compliant (SFF-8020)
- Audio CD like drawer loading of a disc without using a caddy.
- Power loading and power eject of a disc. The disc can also be ejected manually.
- Housed in an airtight frame casing.

Supported disc formats

- Reads data from CD-ROM, CD-ROM XA, CD-I and CD-I Ready format discs, and from CD-EXTRA and CD TEXT discs.
- Reads data from CD-BRIDGE format discs including PHOTO-CD.
- Reads standard CD-Digital Audio encoded discs.
- Reads Video CD discs.

Performance

- Supports quadruple, 8 times and Max. 32 times speed operations with real time error correction.
- Fast access time ensuring reliable high-speed data access.

Audio

- Outputs 16-bit digital audio data over the ATA interface.
- Equipped with audio line output and headphones jack for audio CD playback.

Note:

The CDU701 is not equipped with an ADPCM audio circuitry required to support CD-ROM XA and CD-I compatible audio modes. In addition, the unit does not support the CD-I graphic decoding function; it has to be provided by the system.

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Software Requirement

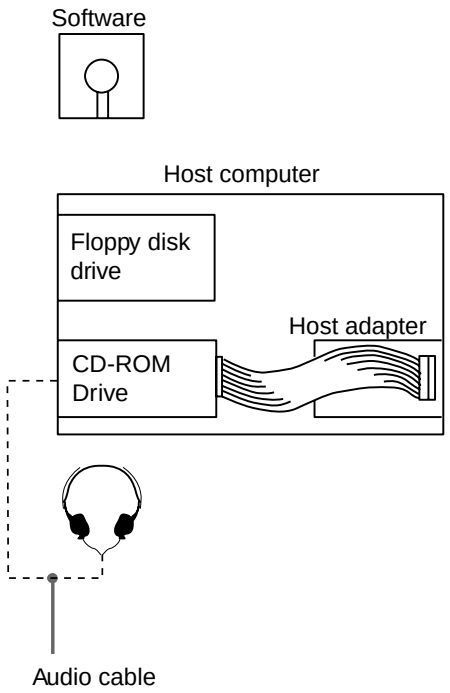
To access data on CD-ROM discs, the appropriate device driver and MSCDEX (supplied with the host adapter) must be installed in your computer when the OS is MS-DOS/Windows 3.1. See the manual that comes with the host adapter for details.
The application software you need for using the data on a CD-ROM disc depends on the type and format of the target data. See the manual supplied with your CD-ROM disc for instructions.

Example of System Setup

To use the CD-ROM drive unit, the following components are required:

- Computer (IBM PC, PC/XT, PC/AT, HP Vectra, or equivalent)
- IDE host adapter (ATA compliant)
- Floppy disk drive
- IDE interface cable (40 ⇔ 40 pin flat cable)
- Software (Device driver, Utilities)

The following is an example of system setup.



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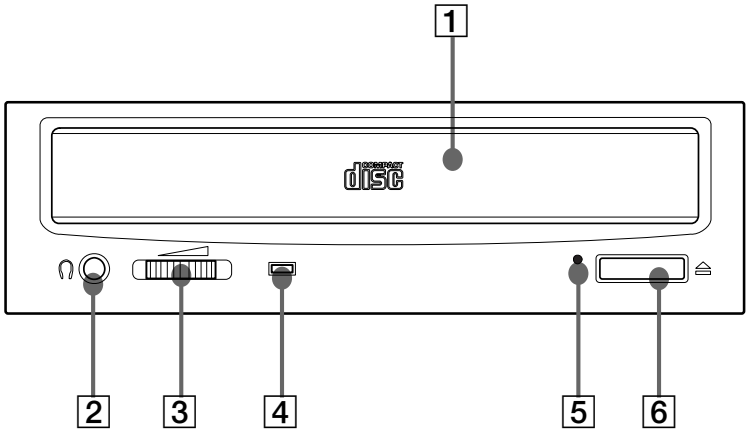
Location and Function of Parts and Controls

Front Panel



1 Disc drawer
Accepts a CD-ROM disc on its tray.

2 Headphones jack
Accepts a stereo headphones set. Analog audio signals are output.

3 Volume control
Controls the volume level of sound output from the headphones jack 2

4 Busy indicator
This amber indicator lights or flashes to indicate one of the following unit conditions.
- Steady lit: TOC (table of contents) read, seek data read, or audio playback in progress.
- Flashing: Drawer in motion.

5 Emergency eject hole
Used to open the disc drawer manually when neither the eject button 6 or a software command works. Insert a pointed object, such as a paper clip, into this hole and push.

6 Eject button
Opens and closes the disc drawer.

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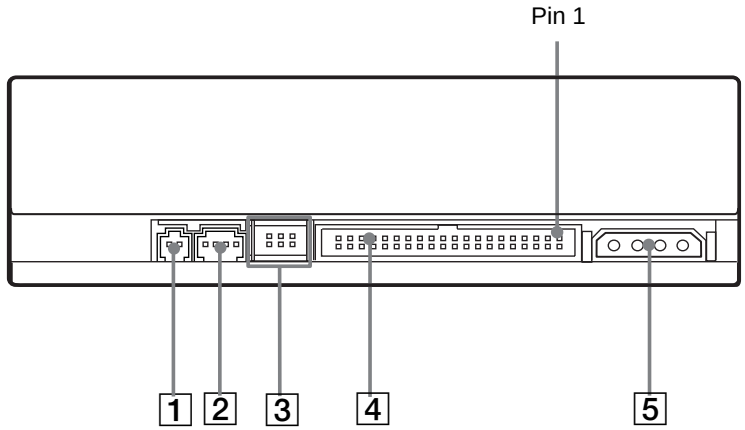
Rear Panel



1 Unused

2 ANALOG AUDIO connector
Outputs analog audio signals.

3 Configuration Jumpers
See page 12 for details.

4 INTERFACE CONNECTOR (IDE bus)
Connect to IDE host adapter using a connecting cable.

5 DC INPUT (power-in) connector
Connect to the power supply of the host computer.

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Precautions

■ Installation

- Avoid placing the drive in a location subject to:
  – high humidity
  – high temperature
  – excessive dust
  – mechanical vibration
  – direct sunlight
- Do not force the power cable. It is keyed to protect the drive.

■ Operation

- Do not move the drive when it is in use. Doing so may cause data error and damage the optical pick-up.
- Avoid exposing the drive to sudden changes in temperature as condensation may form on the lens inside the drive. Should the surrounding temperature suddenly rise while the drive is turned on, stop using the drive and leave the power on at least one hour before operating it or turning it off. Operating the drive immediately after a sudden increase in temperature may result in a malfunction.

■ Transportation

- Close the disc drawer before moving the drive.
- Keep the original packing materials. When you need to ship the drive to another location, repacking it in its original container will help you transport it safely.

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Installing the Drive in Your Computer

This section provides an example of instruction for installing the CD-ROM drive unit into your personal computer using the IDE Host Adaptor (ATA-Compliant).
To connect the CDU701 directly to the PC's IDE port, consult your PC manufacturer for instruction.

Preparation

You need the following parts and tools (these are not supplied with the drive):

- A flat-blade screwdriver
- Four screws 3 mm in diameter and 6 mm in length.
- Two mounting rails if your computer has mounting tracks.

Unplug the computer and disconnect the cables attached to the back to give yourself more room to work. Do not turn on the power of the computer before completing the entire installation process.

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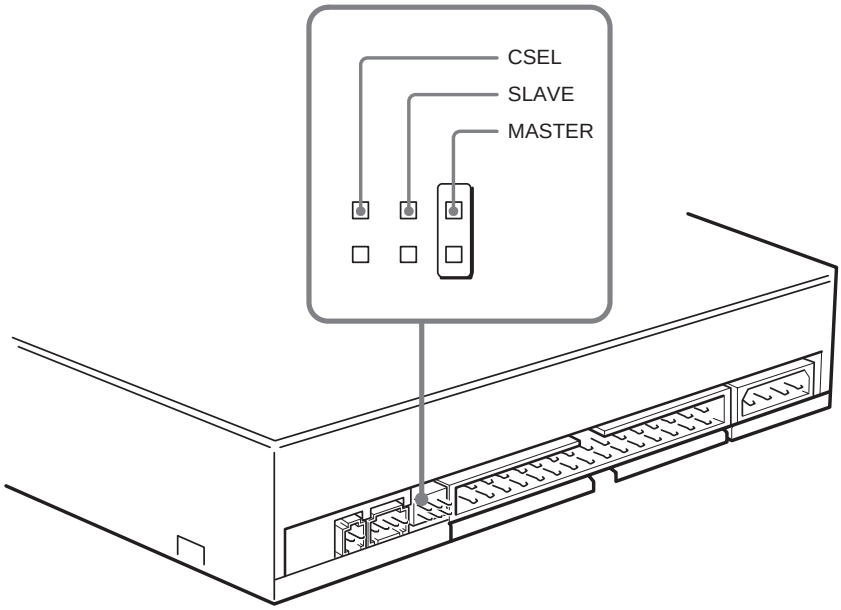
Setting the Jumpers

Set the jumpers on the rear of the drive in accordance with the configuration of your computer system.

The jumpers are preset at the "MASTER" position as illustrated at the factory.



Notes for configuration jumpers:

- Designation of the Drive Number is generally set by inserting a jumper pin on either the MASTER or the SLAVE pin.
- When the CDU701 is daisy-chained with a Hard Disk Drive on an IDE Card, set the Hard Disk Drive as MASTER and the CDU701 as SLAVE.
- If the CDU701 is the only device connected to the IDE Card, set the CDU701 as MASTER.

However, it should be noted that some personal computers may use CSEL in lieu of the foresaid MASTER/SLAVE selection. In this case, remove the existing jumpers from MASTER and SLAVE, and set a jumper on CSEL. When the CSEL signal of the interface connector is set low, the drive is designated as Drive 0. When the CSEL is set high, the drive is designated as Drive 1.
Consult your PC manufacturer, IDE Card manufacturer or dealer for further details.

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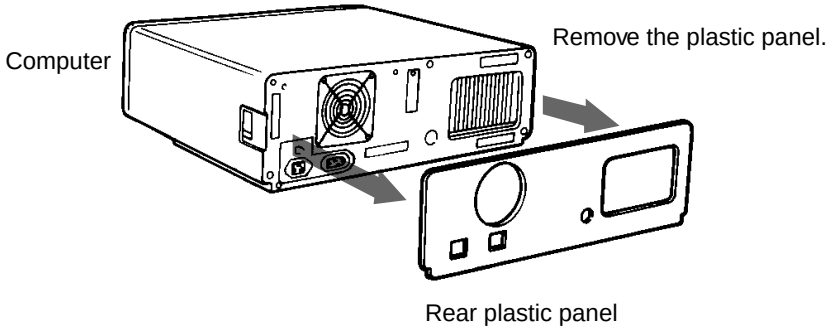
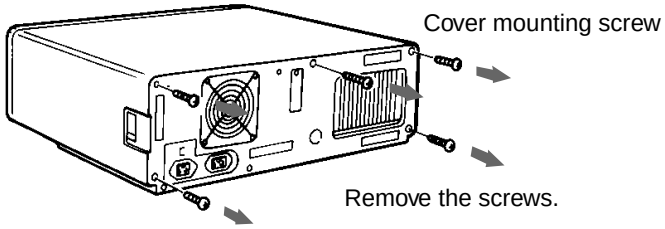
Opening the Computer

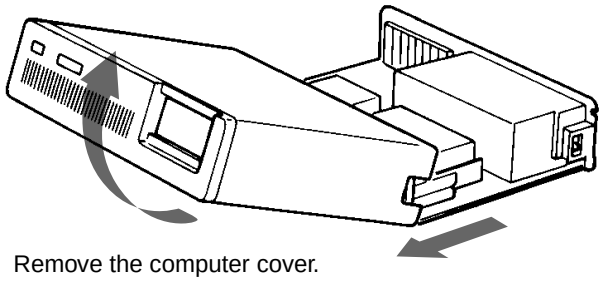
1 If your computer has its rear side covered by a plastic panel attached with plastic hook pad, pull it off.



2 Remove the cover mounting screws.



3 Remove the cover of the computer.



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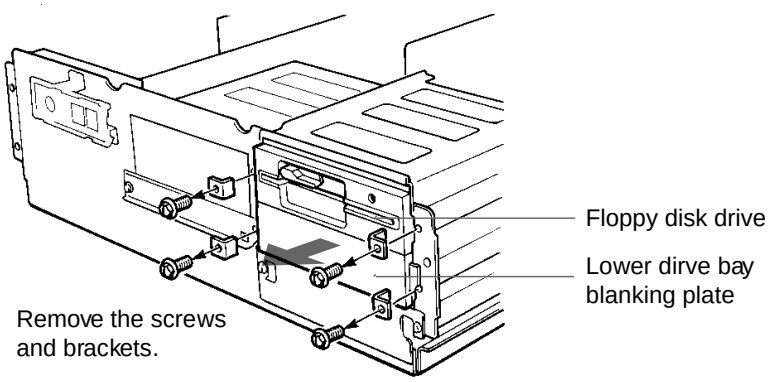
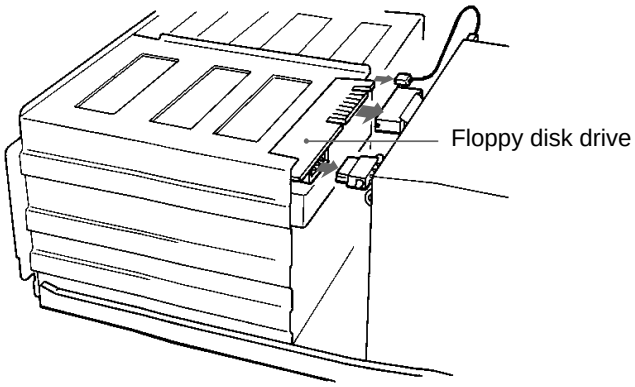
Preparing a Space for the Drive

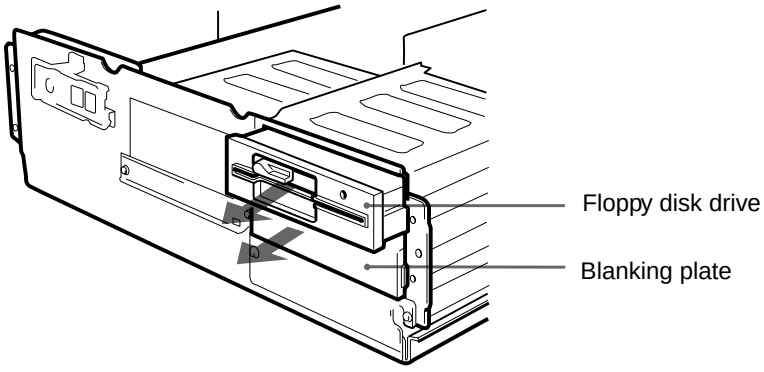
1 Remove the screws and brackets securing the floppy disk drive and the lower drive bay blanking plate.



2 Disconnect the floppy disk drive.



3 Remove the floppy disk drive and the blanking plate.



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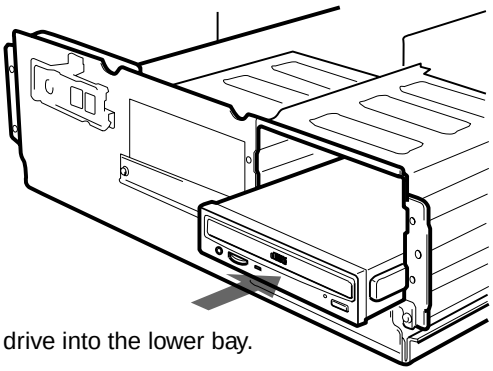
Mounting the Drive

If mounting rails are necessary, attach them to the drive in the same way as your floppy disk drive and slide the drive into the lower drive bay. If mounting rails are not required in your system, screw the drive in place.



Slide the drive into the lower bay.

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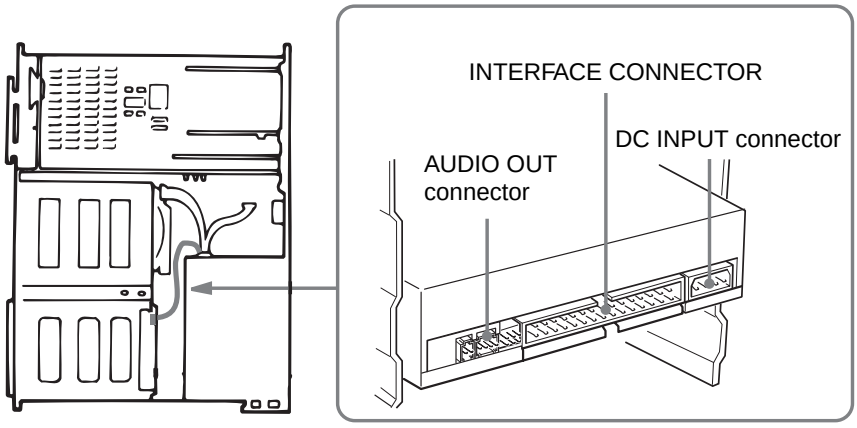
Connecting the Drive

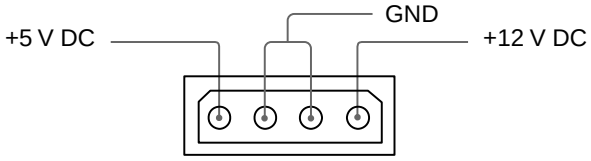
Connect the drive to the computer with the following connectors:

- DC INPUT connector
- AUDIO OUT connector (if you plan to connect audio equipment)
- INTERFACE CONNECTOR.



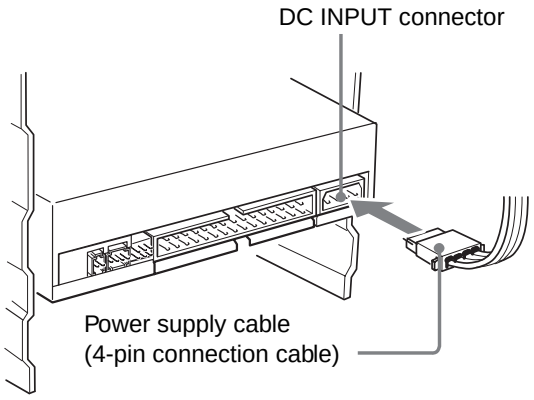
■ DC INPUT connector

The pin assignment is as follows.



After matching the beveled edges, insert the plug of the power supply cable to the DC INPUT connector and push it firmly in place.

Caution: Improper connection may damage the drive and void the warranty.



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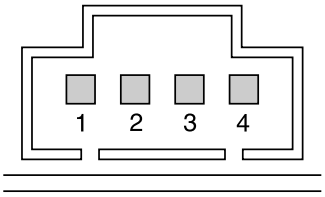
■ AUDIO OUT connector

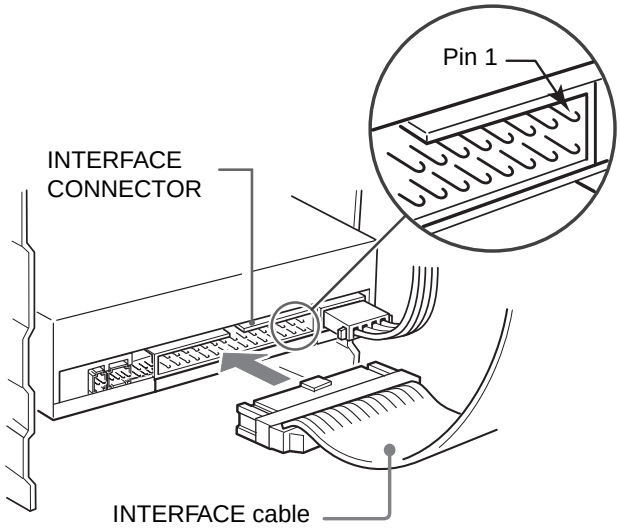
The pin assignment is as f ollo ws:



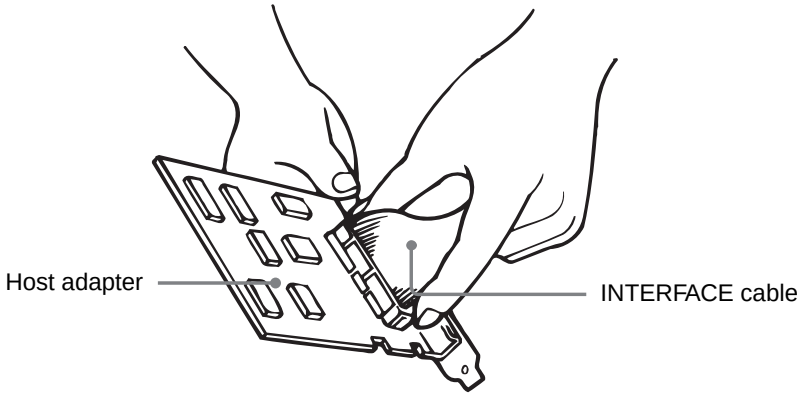
pin	Audio Signal
1	R signal
2	ground
3	ground
4	L signal

■ INTERFACE CONNECTOR

1 Firmly insert one end of the interface cable into the INTERFACE CONNECTOR.



2 Attach the other end of the cable to the host adapter.



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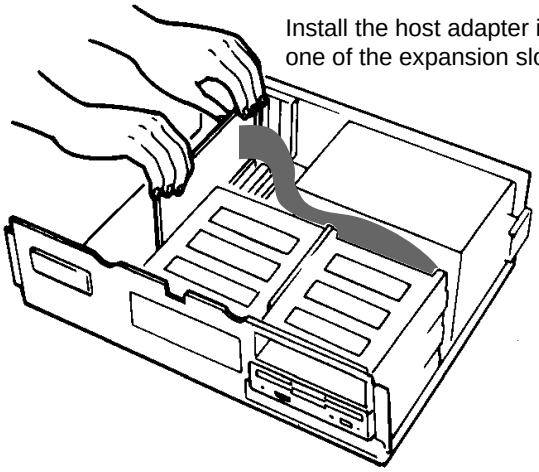
Mounting the Host Adapter

Install the host adapter in one of the available system expansion slots of your computer. Refer to the operating instructions included with the host adapter for complete instructions on installation and settings.



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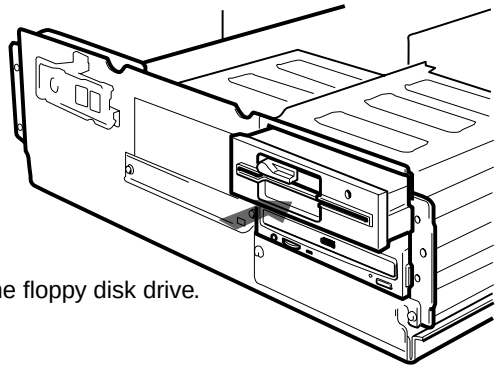
Reassembling the Computer

1 Reinstall the floppy disk drive in the top drive bay.

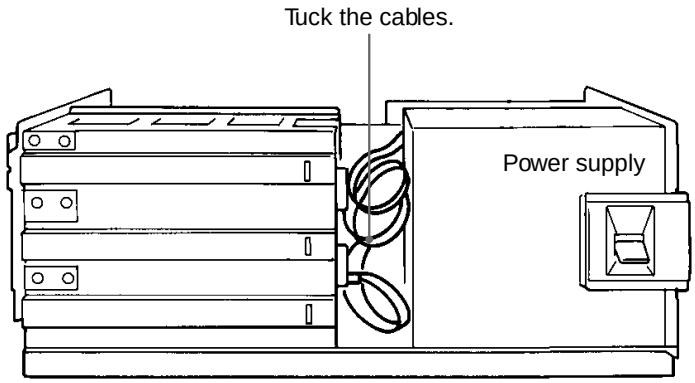


Reinstall the floppy disk drive.

2 Reconnect the interface cables to the floppy disk drive.

3 Fasten the screws and front brackets as they were before.

4 Tuck the cables behind the drives so that they do not protrude above the power supply module.



5 After checking the following points, slide the computer's cover on and fasten the cover mounting screws at the back of the computer.

- Are the connections between the drive and computer correct?
- Are the jumpers set to the appropriate positions?

6 Remount the rear plastic panel and refer back to the proper installation section if you answered "no" to either of the questions above.

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Installing the Software Driver

The installation diskette enclosed in the package contains two software items:

- Installer
- Device driver for MS-DOS/Windows 3.1

Note:
Both Microsoft CD-ROM Extensions (MSCDEX) or equivalent and Sony's Device Driver are required to run the CDU701 under the MS-DOS and Windows 3.1 environment.
Therefore, prior to loading the installation diskette, make sure that the MSCDEX is in the DOS directory of your hard disk drive (C:\DOS). Although MSCDEX is included in the most up-to-date MS-DOS (ver. 6.2), you may need to obtain the software from your PC dealer if you do not have it.

The installer will automatically load MSCDEX via the AUTOEXEC.BAT file and installs the Device Driver via the CONFIG.SYS file, if MSCDEX is already in Drive C:\DOS.

How to Install

At the DOS Prompt A: (Drive A active),

```
>A:\
```

Load the diskette into the floppy disk Drive A, and type "install".

```
>A:\install
```

and then, press the Enter key.
After installation, the following lines are added to CONFIG.SYS and AUTOEXEC.BAT files.

in CONFIG.SYS:
Device=C:\DEV\ATAPI_CD.SYS /D:mscd000 /I:0
in AUTOEXEC.BAT:
C:\DOS\MSCDEX.EXE /D:mscd000 /M:12 /V

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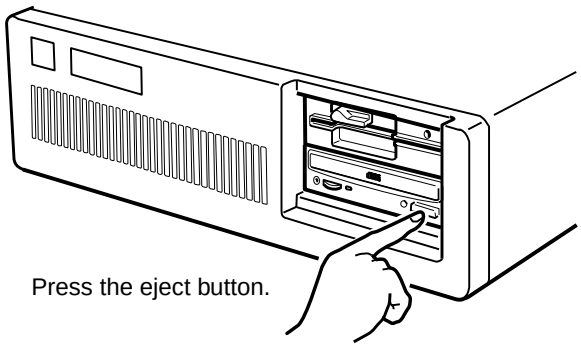
Operating the Drive

This section describes how to start the drive and eject a disc.

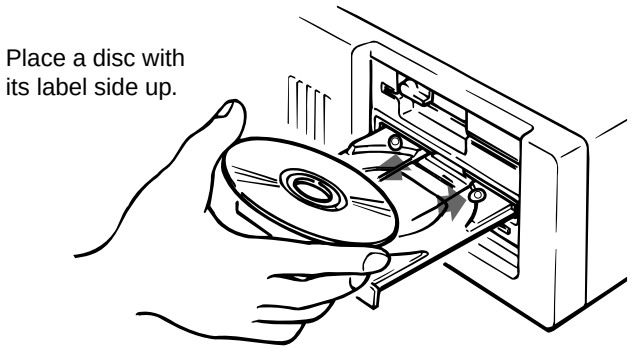
Starting the Drive

1 Turn on the power of your computer.

2 Press the eject button.
The drawer comes out automatically.



3 Place a disc in the drawer with its label side up.



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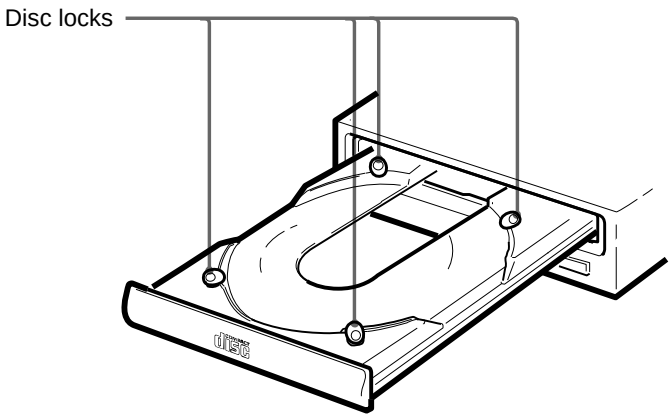
Note:

When the drive is set up in ver tical position, use the disc loc ks to pre vent y our disc fr om falling. See "Ho w to Use the Disc Loc ks" on page 24 for details.



4 Gently push the drawer or press the eject button to close the drawer.

The drive may begin reading the Table of Contents (TOC) data when it accepts the disc. The busy indicator lights up in amber while the drive is reading the TOC.

For subsequent drive operations, follow the instructions provided with the application software you are using.

Note:

The b usy indicator sta ys lit in amber if:

- the disc is not properly placed on the loading tray
- a malfunction occurs.

In either case , eject the disc and place it in the loading tra y a gain making sure that it sits pr operl y in the tra y. If doing this does not solve the pr ob lem and the b usy indicator still remains lit in amber , consult y our dealer or qualified ser vice per sonnel.

Caution: Do not f or cib ly c lose the disc dra wer . Appl ying e xcessive for ce ma y dama g e the loading mec hanism. The tra y's mec hanism is designed to operate with a "feather touch".

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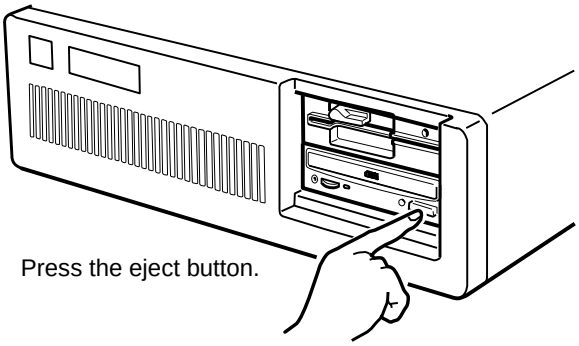
Ejecting the Disc

To eject the disc, press the eject button on the front panel. The drawer comes out automatically.



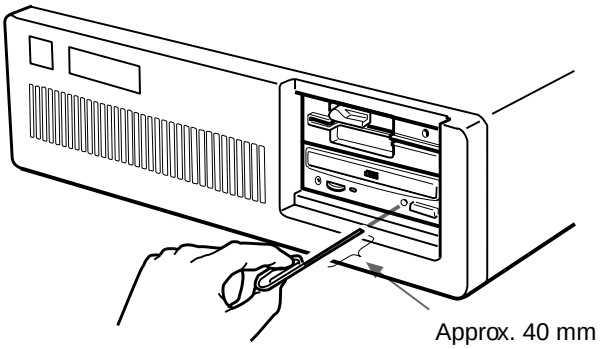
Note:
The eject button does not work if it is disabled by:
– the software you are using

■ Opening the drawer manually in an emergency

You can open the drawer manually when it fails to come out by means of the eject button or software commands. To do this, follow the procedure below:

1 Turn off the power of your computer.

2 Insert a pointed object, such as a paper clip, into the emergency eject hole and push.



After removing a disc from the drive unit, consult your dealer or qualified service personnel.

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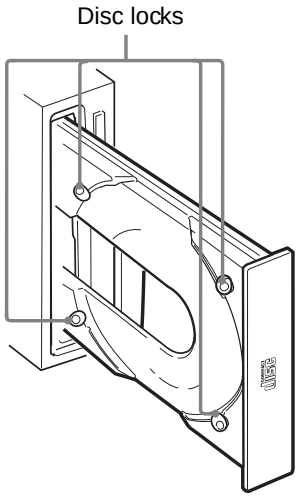
How to Use the Disc Locks

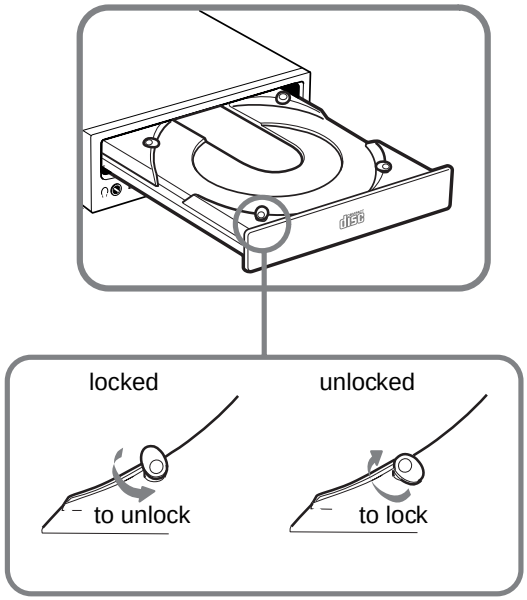
The disc tray has four disc locks that prevent the disc from falling when the drive is set up in vertical position.



Note:
When the drive is used in horizontal position, you do not need to lock the disc.

■ Locking and unlocking

All of the four locks are set in the unlocked position (facing outward) when the drive is shipped from the factory. To set the lock in the locked position, turn it with your fingers until you hear a click so that it faces inward.



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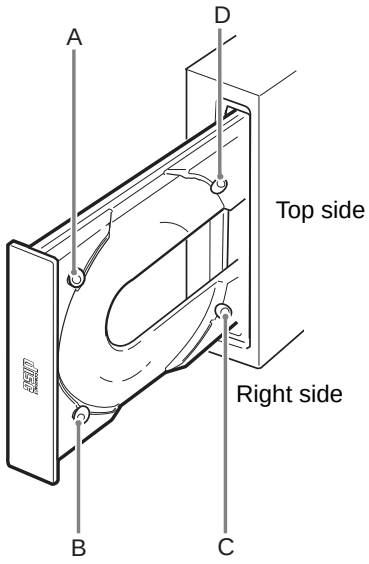
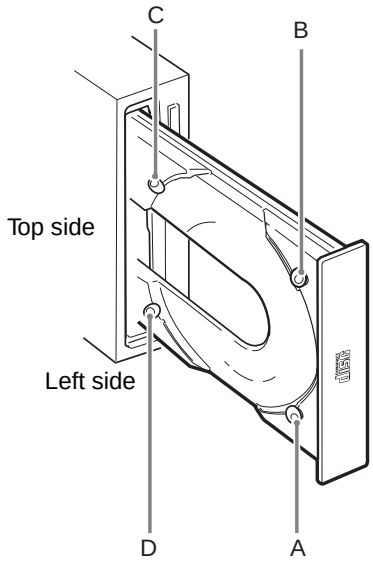
When the drive's right side is down

To facilitate disc handling, set the disc locks B, C and D into the locked position, and leave the disc lock A in the unlocked position.



When the drive's left side is down

To facilitate disc handling, set the disc locks A, C and D into the locked position, and leave the disc lock B in the unlocked position.



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Specifications

■ General

Host interface	ATA-PI compliant
Disc	
Acceptable discs	CD-Digital A udio discs CD-R OM mode-1 data discs CD-R OM mode-2 f orm1/f orm2 data discs CD-R OM XA discs (readab le) Audio-combined CD-R OM discs CD-I discs (readable) CD-I Ready discs (readable) CD Bridge discs Photo CD discs (single and multi session) CD EXTRA discs Video CD discs, CD TEXT discs
Rotational speed	
	2000 min $^{-1}$ (rpm) 4-9× CAV 4000 min $^{-1}$ (rpm) 8-18 × CAV 7000 min $^{-1}$ (rpm) 14-32 × CAV

■ Drive performance

Data transfer rate	
Sustained rate	600-1350 kb ytes (4-9 × CAV) 1200-2700 kb ytes (8-18 × CAV) 2100-4800 kb ytes (14-32 × CAV)
Burst rate	16.7 Mbytes/s (mode 4) IO CHANNEL READ Y suppor ted 16.7 Mb ytes/s (Multiw or d DMA mode 2)
Access time	
(Random str oke)	90 ms (typical/14-32 × CAV)

■ Reliability

Read err or rate (inc ludes retr y, with a standar d disc)	
L-EC on	1 block/10 ^{12} bits
L-EC off	1 block/10 ^{9} bits

■ Audio

Output le vel	
Line out	0.75 V at 47 k Ω
Headphone	0.55 V at 32 Ω

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■ Environmental conditions

Operating	
Temperature	5 °C to 50 °C (41 °F to 122 °F)
Humidity	10 % to 90 % (Max wet b ulb 29 °C)
Atmosphere	Non-condensing
Non-operating/Storage	
Temperature	–30 °C to 50 °C (–22 °F to 122 °F)
Humidity	10 % to 90 %
Atmosphere	Non-condensing

■ Dimensions and mass

Dimensions	146 × 41.4 × 208 mm (w/h/d) ($5\ ^{3}/_{4} \times 1\ ^{11}/_{16} \times 8\ ^{1}/_{4}$ inches)
Mass	0.90 kg (2 lb)

■ Power requirement

Volta g e	+5 V ± 5 % DC and +12 V ± 10 % DC
Current	Tra y Open/Close +5 V DC ; ≤1100 mA +12 V DC ; ≤1400 mA Seeking and Spin Up/Do wn +5 V DC ; ≤1400 mA +12 V DC ; ≤1600 mA Hold Trac k State +5 V DC ; ≤1400 mA +12 V DC ; ≤800 mA Standby/Sleep +5 V DC ; ≤100 mA +12 V DC ; ≤30 mA

■ Connectors

INTERF ACE CONNECT OR (with DC INPUT connector)	AMP 179376-1 or equiv alent
AUDIO OUT connector	Mole x 5046-04A or equiv alent

■ Laser

Type	Semiconductor laser GaAlAs
Wave length	785 nm
Output po wer	0.3 mW

Design and specifications are subject to c hang e without notice .

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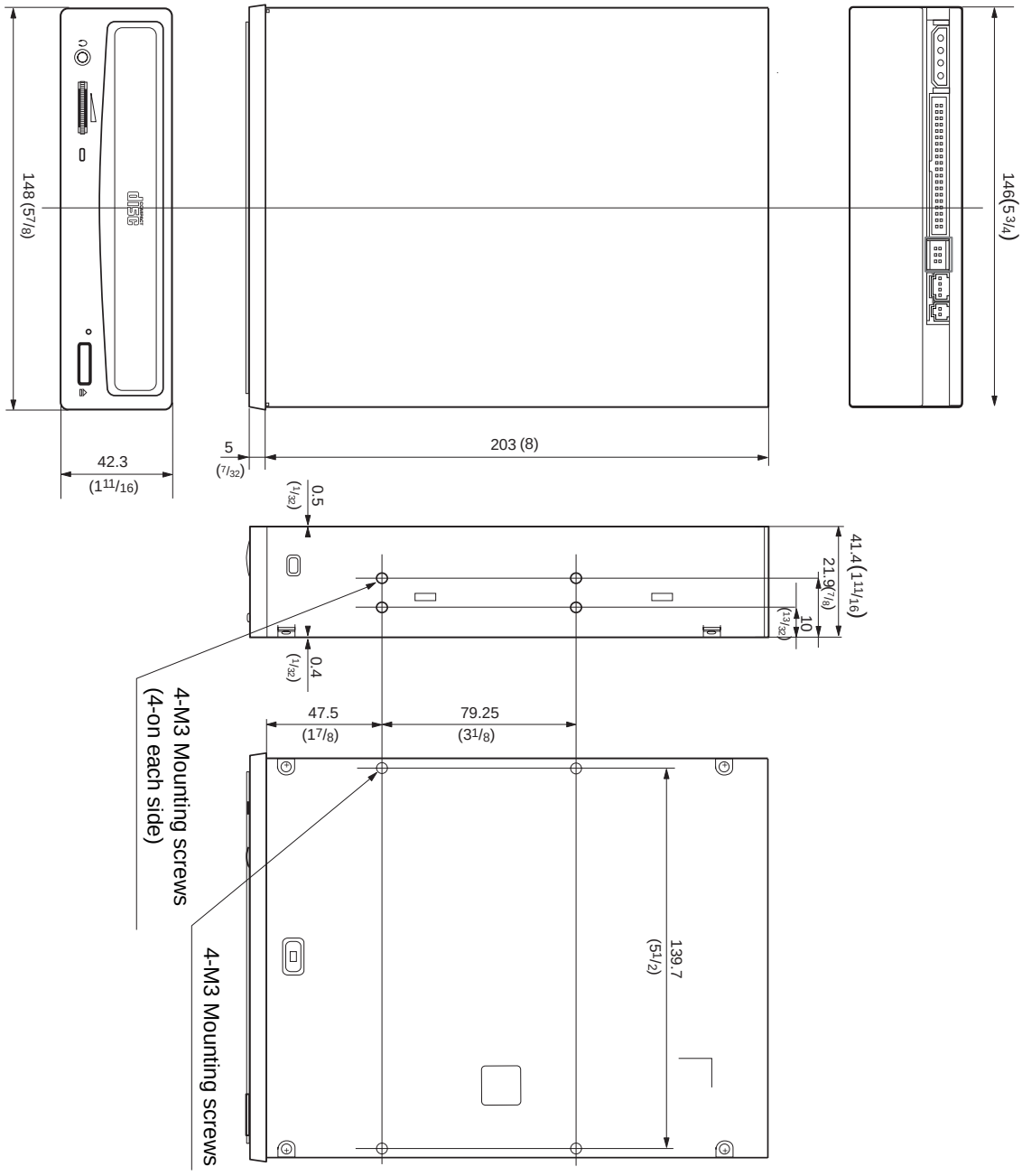
■ Dimension diagram

Important:

The overhang of the screws should not exceed 6.0 mm from the surface of the side panels or the bottom plate.



Unit mm(inch)

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